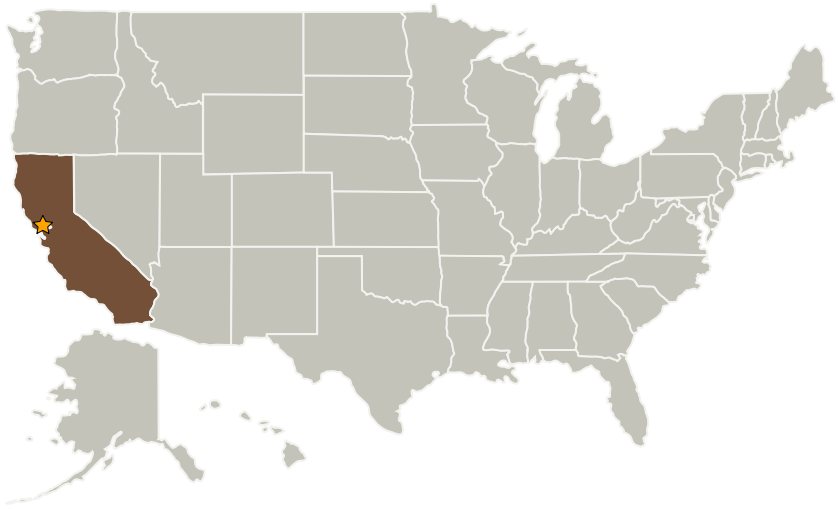
Nytrox Oxidizers for NanoSat Launch Vehicles, Phase I

Completed Technology Project (2008 - 2008)

Project Introduction

Space Propulsion Group, Inc. proposes to conduct systems studies to quantify the performance and cost advantages of Nytrox oxidizers for small launch vehicles. This new class of oxidizers is composed of mixtures of nitrous oxide (N2O) and oxygen (O2) and has significant advantages over the pure oxidizers, some of which can be summarized as 1) higher density, Isp and safer operation compared to N2O, 2) non-cryogenic operation and ease of development of stable and efficient motors compared to LOX. Thus Nytrox is expected to be an important enabling technology for developing low cost, high performance NanoSat launch vehicles. The primary goal of the Phase I effort is to quantify the increase in the payload mass by changing the oxidizer from N2O to Nytrox for the upper stages of a small launch system. In the proposed effort the cost and operational issues associated with producing, transporting and storing the Nytrox oxidizers shall be also be quantified. The planning for the third stage motor development and ground testing that will be conducted in Phase II shall be started in Phase I. Technology Readiness Level ranges of 2-3 and 5-6 are expected at the end of the Phase I and II, respectively.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Ames Research Center (ARC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★Ames Research Center(ARC)	Lead Organization	NASA Center	Moffett Field, California
Space Propulsion Group, Inc.	Supporting Organization	Industry	San Mateo, California

Primary U.S. Work Locations
California

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Arif Karabeyoglu

Technology Areas

Primary:

- TX14 Thermal Management Systems
  - TX14.1 Cryogenic Systems
    - TX14.1.2 Launch Vehicle Propellant